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Revision of the Genus *Piestoneus* SHARP (Coleoptera: Staphylinidae) from Japan¹⁾

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Abstract This is the fourth part on a series of the taxonomic studies of the subfamily Piestinae from Japan, and the genus *Piestoneus* SHARP is treated. Three new species, *Piestoneus deboiseae*, *P. monticola* and *P. oharai* are described. The lectotype is designated for *P. lewisii* SHARP. A key to the species is provided. The important characters for the definition of the genus and the aedeagi for identification are illustrated.

Key words: Coleoptera; Staphylinidae; Piestinae; *Piestoneus*; revision; new species; Japan.

The genus *Piestoneus* was established by SHARP (1889) on the basis of one Japanese species, *Piestoneus lewisii*. After that BERNHAUER (1933) described one new species, *P. reitteri* from China. Up to the present this genus consists only of these two species and the distributional range is very narrow and constricted to East Asia. In this paper the Japanese species of the genus *Piestoneus* were revised, and three new species, *P. deboiseae* from Honshu, Shikoku and Kyushu, *P. monticola* from Honshu, and *P. oharai* from Hokkaido, Honshu, Shikoku and Kyushu were described. *P. lewisii* SHARP was redescribed and its lectotype was designated. Key to the four Japanese species was provided, and the important characters were illustrated for definition of the genus and for identification of the species.

The following abbreviations were used in the text when referring to the material studied: NHMLC (Collection of the Natural History Museum, London); CBM-ZI (Natural History Museum and Institute, Chiba—Zoology Insecta); KYC (Collection of the Entomological Laboratory, Kyushu University); NAOC (Collection of Shun-Ichiro NAOMI); NOMC (Collection of Dr. Shuhei NOMURA).

Genus *Piestoneus* SHARP

Piestoneus SHARP, 1889, Ann. Mag. nat. Hist., (6), 3: 464. Type species: *Piestoneus lewisii* SHARP, 1889 (by monotypy).

¹⁾ Revision of the subfamily Piestinae from Japan, IV.

Body (Fig. 1) flat and parallel-sided; antennae (Fig. 2A) long and slender, extending beyond posterior margins of elytra, length of antenna varying among individuals of same species according to body size, but usually longer in male than in female (see also SHARP, 1889, p. 465); labrum (Fig. 2B) strongly transverse, almost trapezoidal, anterior margin furnished with a line of very long setae, with a pair of relatively short setae at anterolateral corners; mandibles (Fig. 2F, G) robust, left mandible bifurcate at apex, its dorsal process robust, emarginate or pointed at tip, right mandible acutely pointed at apex, its dorsal process pointed except for its bifurcate condition in *P. oharai*; prostheca as in Fig. 2E; maxilla (Fig. 1C) with galea larger than lacinia, maxillary palpi 4-segmented, 4th segment rounded at apex, a little narrower than and about 2 times as long as 3rd; labium with mentum (Fig. 2H) transverse, hexagonal, prementum (Fig. 2D) moderately sclerotized, with median projection, glossa developed, furnished with long and thin setae at marginal area, labial palpi 3-segmented, 3rd segment thick, about as broad as and more than 2 times as long as 2nd; gula (Fig. 2H)

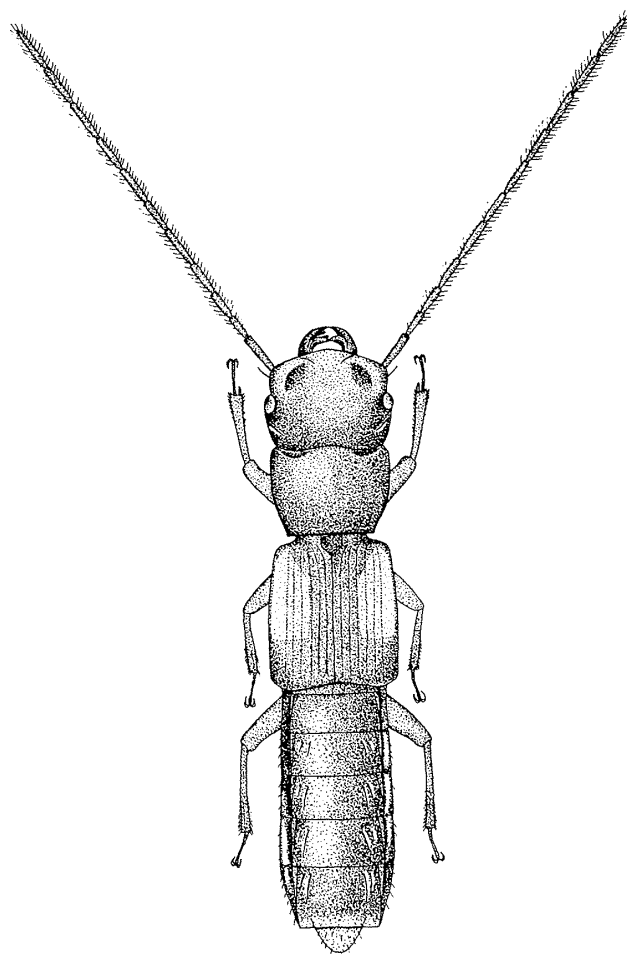


Fig. 1. *Piestoneus lewisii* SHARP.

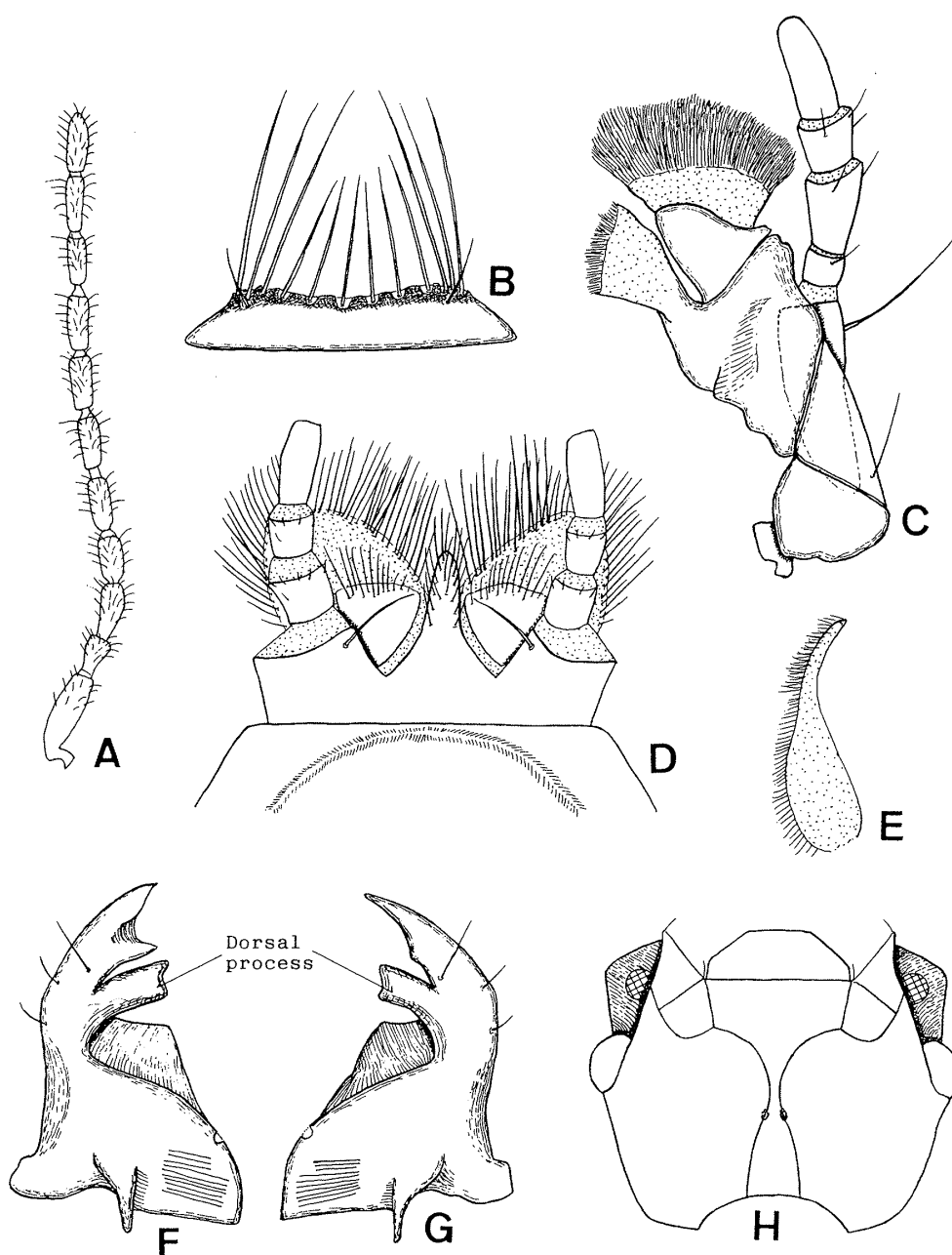


Fig. 2. A–H, *Piestoneus oharai* sp. nov. A, Antenna; B, labrum; C, maxilla; D, labium; E, prostheca; F, left mandible in dorsal view; G, right mandible in dorsal view; H, head in ventral view.

broadened posteriorly; prosternum (Fig. 3A) large, with median coxal process pointed, hypomerall projection acutely pointed; mesocoxal cavities (Fig. 3C) separated by meso- and metasternal processes; metasternum (Fig. 3C) developed, long, hind coxae contiguous; metendosternite as in Fig. 3B; fore, mid and hind legs (Fig. 3F, G, H) moderate in length, tarsal formula 5–5–5; claws symmetri-

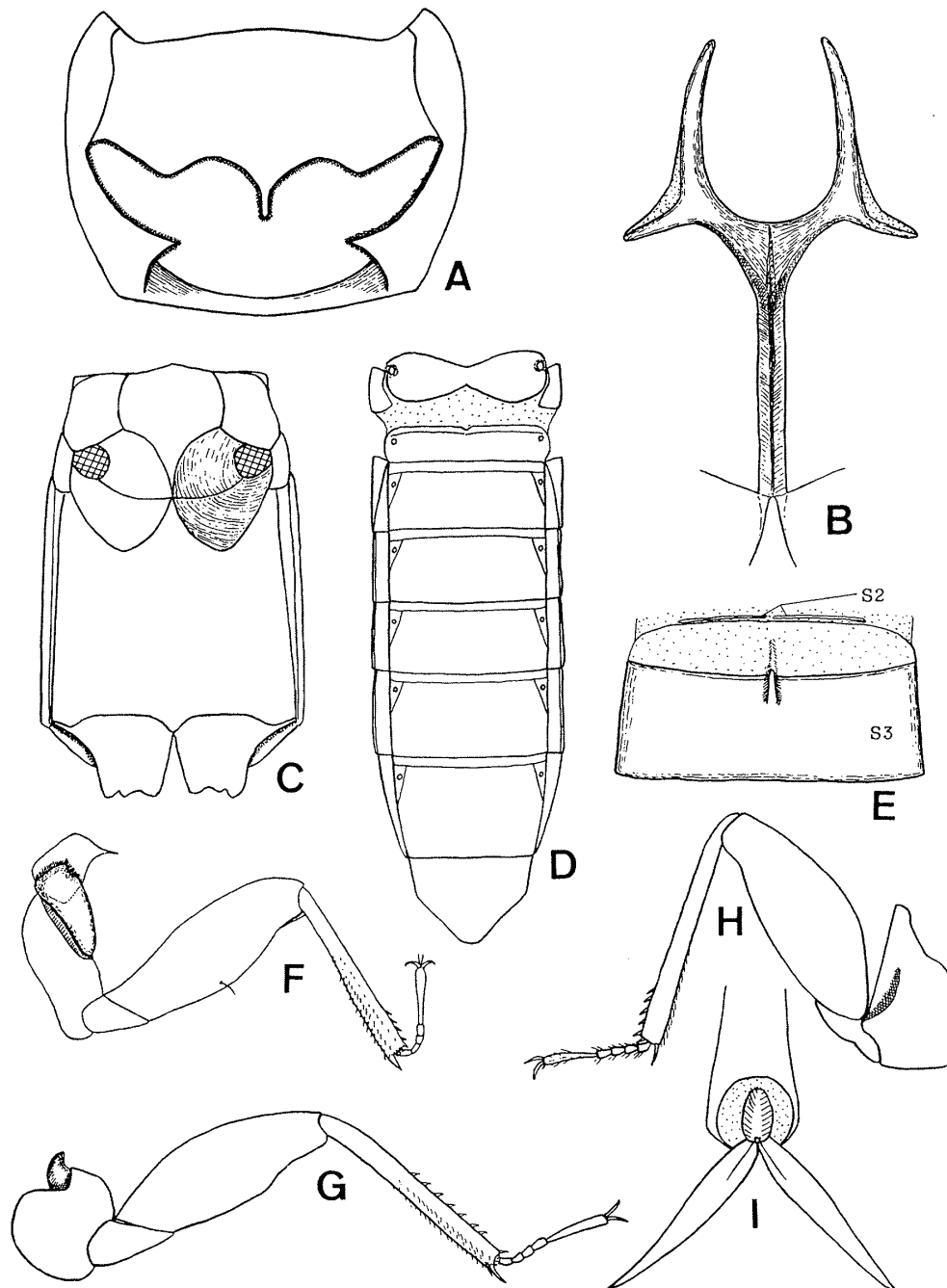


Fig. 3. A–I, *Piestoneus lewisii* SHARP. A, Prothorax in ventral view; B, metendosternite; C, meso- and metathoraces in ventral view; D, abdomen in dorsal view; E, basal part of abdomen in ventral view; F, fore leg; G, mid leg; H, hind leg; I, claws and empodial setae.

cal, empodial setae two and symmetrical (Fig. 3I); abdomen (Fig. 3D) developed, parallel-sided, spiracles dorsal in position in 1st to 7th segments, almost lateral in position in 8th (Fig. 4B), 3rd and 4th tergites without wing-

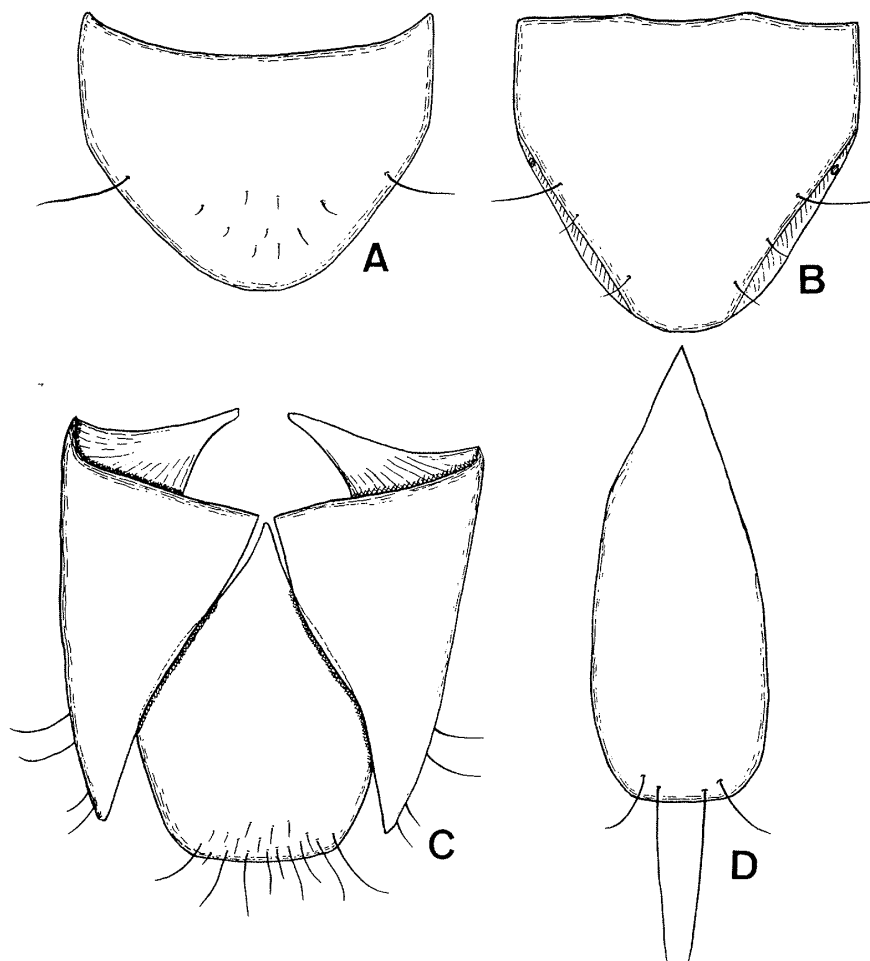


Fig. 4. A–D, *Piestoneus lewisii* SHARP. A, Eighth sternite in male; B, 8th tergite in male; C, 9th and 10th tergites in male; D, 9th sternite in male.

folding spicule patches; 3rd sternite (Fig. 3E) with a short basi-median keel; 8th tergite of male as in Fig. 4B; 8th sternite of male (Fig. 4A) entire; 9th tergite of male (Fig. 4C) separated into two plates, each pointed at posterior end; 9th sternite of male (Fig. 4D) almost truncate at apex, with two pairs of setae near apical margin; 10th tergite of male (Fig. 4C) very weakly rounded or almost truncate at posterior margin; 9th tergite of female (Fig. 5E) composed of two plates which are narrowly contiguous at middle, each plate rounded at apex; 9th sternite of female (Fig. 5F) composed of a pair of hemisternites, coxites and styli, coxite broad, furnished with setae along posterior margin, stylus with a tuft of setae at apex; 10th tergite of female a little asymmetrical, weakly and asymmet-rically rounded at apex; aedeagi (Fig. 5A–D) symmetrical, median lobe more or less bulbous at base, pointed, obtusely pointed or rounded at apex; parameres developed, extending beyond apex of median lobe.

Remarks. This genus is allied to *Siagonium* KIRBY et SPENCE, but easily

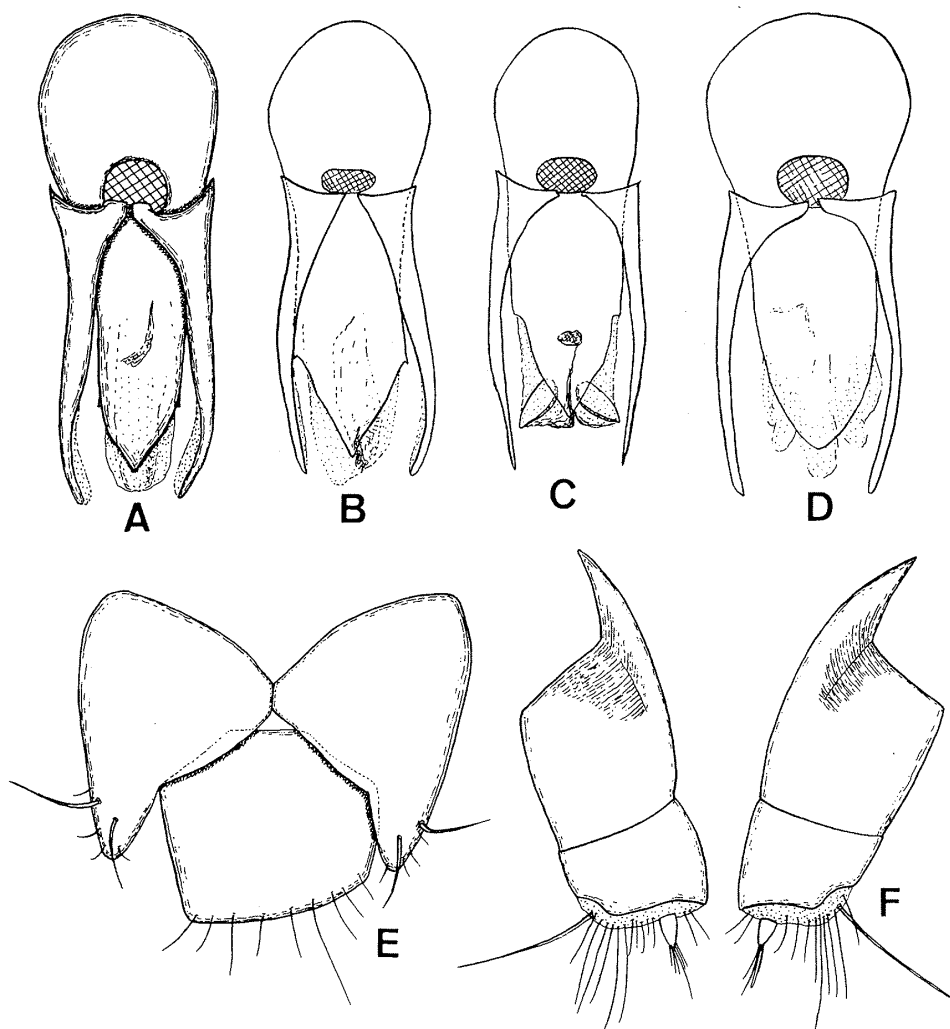


Fig. 5. A, E-F, *Piestoneus lewisii* SHARP; B, *P. deboiseae* sp. nov.; C, *P. monticola* sp. nov.; D, *P. oharai* sp. nov. A-D, Aedeagus in dorsal view; E, 9th and 10th tergites in female; F, 9th sternite in female.

separable from the latter by the characters mentioned in the key (NAOMI, 1995).

Four species of the genus *Piestoneus* are recorded from Japan, and usually distributed from low to high mountainous areas. The adults and larvae are simultaneously collected under barks of dead or decayed trees.

Key to species of *Piestoneus* from Japan

- 1(6) Surface of head usually with fingerprint-like sculpture; antennal tubercles less strongly angulate; right mandible with dorsal process pointed; median lobe of aedeagus distinctly pointed at apex.
- 2(5) Paramere thin and slightly curved inward at apex; median lobe with

- internal armature thin and string-shaped, internal sac without pouch-like structures when evaginated.
- 3(4) Pronotum with more or less angulate near the middle of lateral margin; median lobe narrowed posteriorly in middle, without distinct apicolateral corners.....*P. lewisii* SHARP
- 4(3) Pronotum with more or less rounded near the middle of lateral margin; median lobe parallel-sided in middle, with distinct apicolateral corners.....*P. deboiseae* sp. nov.
- 5(2) Paramere very thin and almost straight at apex; median lobe with internal armature almost rounded, internal sac with a pair of pouch-like structures near apex of median lobe when evaginated.....*P. monticola* sp. nov.
- 6(1) Surface of head without fingerprint-like sculpture; antennal tubercles more strongly angulate; right mandible with dorsal process emarginate; median lobe of aedeagus obtusely pointed or rounded at apex.....*P. oharai* sp. nov.

Piestoneus lewisii SHARP

Piestoneus lewisii SHARP, 1889, Ann. Mag. Nat. Hist., 6, 3: 465; BERNHAUER et SCHUBERT, 1910, Coleopt. Cat., (19): 9; YOKOYAMA and ADACHI (ADACHI), 1951, Icon. Ins. Japon., 2nd ed., p. 987; SAKAGUCHI and SAWADA, 1955, Col. Illust. Ins. Jpn., Coleopt., p. 49; ADACHI, 1957, J. Toyo Univ., (11): 198; NAKANE, 1963, Icon. Ins. Japon. Col. nat. ed., 2: 81; SHIBATA, 1976, Ann. Bull. Nichidai Sanko, (19): 81; WATANABE, 1985, Coleopt. Jpn. Col., 2: 262.

Male and female. Body 5.4–9.3 mm in length, flat, parallel-sided and shining.

Coloration. Head black, with anterior marginal area dark red; pronotum entirely black; elytra black, with a pair of elongate rectangular markings which are usually separated and are located in anterior 2/3 of elytra; abdomen black except for reddish brown 8th abdominal segment; antennae and legs reddish brown to brown; mandibles dark red.

Male. Relative measurements: HL: 34; HW: 46; PL: 33; PW: 46; EL: 54; EW: 47.

Head with antennal tubercles rounded, anterior part before the antennal tubercles narrowed anteriorly, anterior margin almost straight, postocular area weakly narrowed posteriorly, clypeofrontal suture indistinct; surface widely and very shallowly concave; punctures fine and sparse, interstice distinctly broader than diameter of puncture; sculpture fine and fingerprint-like, sometimes indistinct near clypeofrontal suture; three pairs of setae on head, one seta at anterolateral corner of head, one seta at middle of genal area, one seta at postocular area. Eyes lateral in position, small, weakly prominent, about 3/4 times as long

as postocular areas. Antennae long and slender, reaching the posterior margin of 5th abdominal tergite, 1st segment robust and broader than 2nd, 2nd and 3rd each narrowed at base, 4th to 10th each baculiform, 11th obtusely pointed, ALP: 20:11:14:21:20:20:20:20:20:20:23; 2nd segment very sparsely setous, 3rd to 11th covered sparsely with setae of various lengths. Left mandible with dorsal process usually emarginate at tip, but sometimes pointed, right mandible with dorsal process pointed.

Pronotum almost hexagonal, gently bi-sinuate at anterior margin, parallel-sided in anterior half, then narrowed posteriorly, posterolateral corner bluntly pointed, its dorsal surface triangularly concave, posterior margin straight; surface flat but very weakly uneven, in the posterior half with a median longitudinal line which is very thin but distinct; punctures fine and sparse, interstice distinctly broader than diameter of puncture; microsculpture fingerprint-like and running almost longitudinally, but sometimes indistinct on the center of pronotum; several short setae at marginal area. Mesoscutellum almost triangular to tongue-shaped, pointed at apex; surface smooth, with very fine and sparse punctures.

Elytra elongate-rectangular, very weakly broadened posteriorly, each posterior margin weakly arcuate; surface very flat, with 6 rows of striate punctures on each elytron, interstice almost smooth and very shining.

Legs moderate in length; femora thick.

Abdomen parallel-sided; paratergites developed, each with elongate depression on anterior 1/2; dorsal surface of abdomen covered with very fine and very sparse punctures which are distinctly smaller than those on pronotum; sculpture very fine and reticulate; 4th to 7th terga each provided with two pairs of long setae at anterolateral parts (Fig. 1). Aedeagus (Fig. 5A) with median lobe moderately bulbous at base, gradually narrowed apically, acutely pointed at apex, apicolateral corners absent, internal armature thin and string-shaped; parameres extending beyond apex of median lobe, moderate in thickness in basal and median parts, narrowed apically and weakly curved inward at apical parts.

Female. Relative measurements: HL: 35; HW: 48; PL: 36; PW: 49; EL: 57; EW: 50.

Very similarly structured as in male except for shorter antennae which usually reach the middle of 4th abdominal tergite; ALP 20:11:13:15:18:17:18:18:18:18:22.

Type material. The 35 specimens are the syntypes of *Piestoneus lewisii* deposited in the collection of the NHML. Of these the 20 syntypes are true *P. lewisii*, and the other 15 syntypes are *P. oharai* described in this paper. In the collection of *Siagonium vittatum* (NHML) included are also 17 specimens of *P. oharai*. As there are no type-labels for some syntypes of *P. lewisii*, it is difficult to distinguish the syntypes of *P. lewisii* which turn here to be *P. oharai* from the specimens of *P. oharai* which were identified as *S. haroldi* (= *S. vittatum* at that

time). Therefore the label "syntype *Piestoneus lewisii*" was attached to each of the 35 syntypes of *P. lewisii*.

The specimen with red label (*Piestoneus lewisi*. Type D. S. Hakone. Japan. LEWIS/ Japan. LEWIS./ SHARP Coll 1905-313.) is designated as the lectotype of *P. lewisii*; the label "lectotype *Piestoneus lewisii* SHARP NAOMI des 1995" was attached to it. When I dissected the lectotype for examination of the aedeagus I found that the aedeagus was absent from the abdomen although the abdominal terminalia were normally positioned. It is possible that someone dissected and lost it during the examination. The abdominal terminalia were embedded into the water-soluble HOYER's solution, and the celluloid card with them was attached under the lectotype specimen.

Data of the other 19 syntypes of true *P. lewisii* are as follows: 1 syntype, Miyanoshita, May. 1880. LEWIS *Piestoneus lewisi*. D. S./ Japan. LEWIS./ SHARP Coll 1905-313.; 1 syntype, *Piestoneus lewisi*. D. S. Miyanoshita 22. 12. 1880 Japan. LEWIS./ Japan. LEWIS./ SHARP Coll 1905-313.; 1 syntype, *Piestoneus* Japan. LEWIS./ SHARP Coll. 1905-313.; 4 syntypes, Japan. G. LEWIS. B.M. 1926-369./ Chiuzenji.; 6 syntypes, Japan. G. LEWIS. 1910-320./ Miyanoshita. 20.XII.-23.XII. 80.; 1 syntype, Nagasaki. 13.II.-21.IV.81./ Japan. G. LEWIS. 1910-320.; 1 syntype, *Piestoneus lewisi* Japan. LEWIS./ SHARP Coll 1905-313./ Japan. LEWIS.; 4 syntypes, Japan. G. LEWIS. 1910-320.

Further specimens examined. HONSHU: 3 exs., Zenjin, Mt. Chokai, Akita Pref., 19-20. vi. 1980, S. NAOMI coll. (NAOC); 1 ex., Mt. Kammuri, Fukui Pref., 6-7. viii. 1973, H. SASAJI coll. (NAOC); 1 ex., same locality, 5-7. viii. 1973, H. SASAJI coll. (NAOC); 1 ex., Yashagaike, Fukui Pref., 29. iv. 1982, H. SASAJI coll. (NAOC); 2 exs., Ikegahara, Oono, Fukui Pref., 26. vi. 1983, H. SASAJI coll. (NAOC); 4 exs., Mt. Gori, Shimane Pref., 27. x. 1980, M.T. CHUJO coll. (NAOC); 3 exs., Hoki-daisen, Tottori Pref., 12. vi. 1976, S. NAOMI coll. (NAOC); 1 ex., Wakasugi Pass, Okayama Pref., 8. v. 1977, M. KANEDA coll. (NAOC); 1 ex., Mt. Garyu, Hiroshima Pref., 27. vi. 1987, S. NOMURA coll. (NAOC); SHIKOKU: 2 exs., Mt. Hisaishi, Kochi Pref., 23. xi. 1972, T. OGASAWARA coll. (NAOC); KYUSHU: 4 exs., Makinoto Pass, Mt. Kujyu, Oita Pref., 19. iii. 1988, K. YAHIRO coll. (NAOC); 2 exs., same locality, 29. iv. 1969, S. NAOMI coll. (NAOC); 1 ex., Mt. Tara, Nagasaki Pref., 2. xi. 1978, S. IMASAKA coll. (NAOC); 4 exs., Mt. Shiratori, Kumamoto Pref., 7-9. xi. 1980, M.T. CHUJO coll. (NAOC); 1 ex., Akaishi, Gokanoshio, Kumamoto Pref., 7. vi. 1970, SY. NAOMI coll. (NAOC); 2 exs., Mt. Shiroya, Miyazaki Pref., 6. viii. 1978, S. IMASAKA coll. (NAOC).

Distribution. Japan (Honshu, Shikoku, Kyushu).

Remarks. *Piestoneus lewisii* is allied to *P. deboiseae*, but separable from the latter by the shape of aedeagus: the median lobe gradually narrowed apically and the apicolateral corners of median lobe absent.

Specimens measured are as follows: male (lectotype) and female (Japan, G. LEWIS, 1910-320.; NHMLC).

Piestoneus deboiseae NAOMI, sp. nov.

Male and female. Body 5.1–6.9 mm in length, flat, parallel-sided.

Coloration. Very similar to that in *P. lewisii*, but the elytral markings are sometimes vague and variable in shape.

Male. Relative measurements: HL: 35; HW: 46; PL: 34; PW: 46; EL: 54; EW: 48.

Head with genal area parallel-sided, antennal tubercles rounded, anterior margin of head straight, postocular area weakly concave, weakly narrowed posteriorly, clypeofrontal suture indistinct; surface shallowly concave inside the antennal tubercles; punctures and microsculpture very similar in condition to those on *P. lewisii*; three pairs of setae situated at the same position as in *P. lewisii*. Eyes lateral in position, small, weakly prominent, about 3/4 times as long as postocular areas. Antennae reaching posterior margin of 5th abdominal tergite, very similar in structure to those in *P. lewisii*, ALP: 20:11:14:18:20:19:19:19:19:24. Left mandible with dorsal process usually emarginate at tip, but sometimes pointed, right mandible with dorsal process constantly pointed.

Pronotum with anterior margin weakly bi-sinuate, marginal area just behind its emargination concave, lateral margin a little more strongly rounded than that in *P. lewisii*, posterolateral corner bluntly pointed, its dorsal surface concave, posterior margin straight; surface with a median longitudinal line; punctures and microsculpture very similar to those in *P. lewisii*. Mesoscutellum almost triangular to tongue-shaped, bluntly pointed at apex.

Elytra elongate-rectangular, very weakly broadened posteriorly, anterolateral and posterolateral corners rounded, posterior margin weakly arcuate; surface very flat, each elytron with 6 rows of straight punctures which run parallel to one another, interstice almost smooth.

Abdomen parallel-sided; paratergites developed, erect, each with shallow and elongate depression; dorsal surface of abdomen with very fine and sparse punctures and very fine reticulate sculpture; 4th to 7th tergites each with two pairs of long setae. Aedeagus (Fig. 5B) with median lobe moderately bulbous at base, parallel-sided in middle, apicolateral corners distinct, apicolateral margins almost straight, apex acutely pointed, internal armature string-shaped; parameres slightly extending beyond apex of median lobe, narrowed apically, weakly curved inward at apical parts.

Female. Relative measurements: HL: 35; HW: 48; PL: 34; PW: 47; EL: 54; EW: 49.

Very similarly structured as in male except for shorter antennae which reach

the posterior margin of 4th abdominal tergite; ALP: 20:12:13:18:20:19:19:19:19:24.

Holotype, male (CBM-ZI 33879), Mt. Hiko, Fukuoka Pref., 7. viii. 1977, S. NAOMI coll. Paratypes, HONSHU: 6 exs., Nuruyu, Hanayama, Miyagi Pref., 6. viii. 1984, K. MORIMOTO coll. (NAOC); 1 ex., same locality, 21. vi. 1983, S. NOMURA coll. (NAOC); 3 exs., Okutama, Tokyo, 14. vi. 1975, K. EMOTO coll. (NAOC); SHIKOKU: 3 exs., Mt. Tsurugi, Tokushima Pref., 15. x. 1980, S. NAOMI coll. (CBM-ZI 33888–33890); 8 exs., same data as above (NAOC); 4 exs., same locality, 15–17. x. 1980, S. NAOMI coll. (NAOC); KYUSHU: 4 exs. (including 1 larva), 7. viii. 1977, Mt. Hiko, Fukuoka Pref., NAOMI coll. (NAOC); 1 ex., same locality, 18. xi. 1970, M. T. CHUJO coll. (KYC); 2 exs., Mt. Hakucho, Gokanoshō, Kumamoto Pref., 8. xi. 1980, M. T. CHUJO coll. (NAOC); 1 ex., Yamaingiri, Gokanoshō, Kumamoto Pref., 9. vii. 1983, H. ARAMAKI coll. (NAOC); 1 ex., Mt. Ichifusa, Kumamoto Pref., 1. viii. 1970, S. NAOMI coll. (NAOC); 8 exs., Shibisan, Kagoshima Pref., 4. iii. 1985, M. OHARA coll. (NAOC); 4 exs., same locality, 17. vii. 1983, M. OHARA coll. (NAOC).

Distribution. Japan (Honshu, Shikoku, Kyushu).

Remarks. *Piestoneus deboiseae* is allied and very similar in external structure to *P. lewisii*, but is separable from the latter by the shape of aedeagus: the median lobe parallel-sided in the middle and the apicolateral corners of median lobe distinct.

P. deboiseae and *P. lewisii* widely overlap each other in distribution, but they probably segregate each other at the level of their microhabits because they were not usually collected under the same bark of decayed tree. However, these two species were once collected simultaneously at the same forest of Mt. Hakucho of Kumamoto Prefecture although it is not clear whether or not they were collected from the same tree.

Specimens measured are as follows: male (holotype) and female (Shibisan, Kagoshima Pref., 4. iii. 1985; NAOC).

Etymology. This species is named in honour of Miss. Emma DEBOISE of the Natural History Museum, London for her kindness in sending me a series of the type-material of *Piestoneus lewisii*.

Piestoneus monticola NAOMI, sp. nov.

Male and female. Body 4.5–5.8 mm in length, flat, parallel-sided and shining.

Coloration. Head black, with anterior marginal area dark red; pronotum entirely black; elytra black to dark red, with a pair of elongate-rectangular markings which are deeper red and more widely separated each other than in *P. lewisii*; abdomen black, but the posterior marginal area of 7th segment and whole

part of 8th segment reddish brown to brown; antennae and legs dark reddish brown to reddish brown; mandibles dark red to dark reddish brown.

Male. Relative measurements: HL: 35; HW: 46; PL: 32; PW: 47; EL: 52; EW: 49.

Head with anterior margin almost straight, anterior part before antennal tubercles narrowed anteriorly, genal area subparallel-sided, postocular area weakly narrowed posteriorly, clypeofrontal suture indistinct; surface very flat, but very shallowly and widely depressed inside the antennal tubercles and at the center of vertex; punctures fine and sparse, interstice distinctly broader than diameter of puncture; sculpture fingerprint-like and fine, but sometimes indistinct; three pairs of setae situated at the same location as in *P. lewisii*. Eyes lateral in position, small, weakly prominent, about $2/3$ to $3/4$ times as long as postocular areas. Antennae long and slender, reaching posterior margin of 5th abdominal tergite, similarly structured as those in *P. lewisii*, ALP: 20:10:12:14:18:17:17:17:17:18. Left mandible with dorsal process pointed or emarginate at tip, sometimes showing the intermediate condition, right mandible with dorsal process always pointed.

Pronotum gently bi-sinuate at anterior margin, gently rounded or very feebly angulate near the middle of lateral margin, narrowed posteriorly in posterior $2/5$, posterolateral corner bluntly pointed, posterior margin almost straight; surface flat but very weakly uneven, with a thin and distinct median longitudinal line, the line usually present in posterior half, but sometimes extending forward close to anterior margin of pronotum; punctures fine and sparse, interstice distinctly broader than diameter of puncture; microsculpture fingerprint-like and running almost longitudinally. Mesoscutellum similar in shape to that in *P. lewisii*, very smooth and shining except for very sparse and fine punctures.

Elytra elongate-rectangular, very weakly broadened posteriorly, each posterior margin very weakly arcuate or almost straight; surface very flat, with 6 rows of striate punctures on each elytron, interstice smooth and very shining.

Abdomen parallel-sided; paratergites developed, each with elongate depression on anterior $1/2$ or $2/3$; dorsal surface of abdomen similarly punctate and sculptured as in *P. lewisii*, with two pairs of long setae at each of 4th to 7th tergites. Aedeagus (Fig. 5C) relatively broad, median lobe less strongly bulbous than in *P. lewisii* at base, almost parallel-sided in middle, abruptly narrowed at apicolateral corners, very weakly arcuate at apicolateral margin, pointed at apex, internal armature almost rounded, internal sac with a pair of pouch-like structures near apex of median lobe when evaginated, inner margin of the pouch moderately sclerotized; parameres extending far beyond apex of median lobe, moderately thick at basal parts, attenuate, very thin and almost straight at apical parts.

Female. Relative measurements: HL: 35; HW: 45; PL: 35; PW: 48; EL: 57; EW: 50.

Antennae shorter than in male, reaching posterior margin of 3rd abdominal tergite, ALP: 20:11:13:14:15:13:15:16:16:18:22.

Holotype, male (Type No. CBM-ZI 33878), Chuzenji, Nikko, Tochigi Pref., 8. vii. 1994, S. NAOMI coll. Paratypes, HONSHU: 1 ex., Mt. Kurikoma, Miyagi Pref., 21. vi. 1983, K. MORIMOTO coll. (NAOC); 3 exs., Mt. Chokai, Yamagata Pref., 19. vi. 1980, S. NAOMI coll. (CBM-ZI 33891–33893); 16 exs., same data as above (NAOC); 2 exs., Mt. Hotaka, Gunma Pref., 25. vii. 1977, M. TAO coll. (NAOC); 1 ex., Chuzenji, Tochigi Pref., 8. vii. 1994, S. NAOMI coll. (NAOC); 3 exs., same locality, 28–30. vi. 1982, S. NAOMI coll. (NAOC); 2 exs., Togakushi, Nagano Pref., 23. viii. 1979, T. FUJISAWA coll. (NAOC).

Distribution. Japan (Honshu: Tohoku, Kanto and Chubu districts).

Remarks. *Piestoneus monticola* is allied to *P. lewisii* and *P. deboiseae*, but is clearly separable from them by the structure of aedeagus: the paramere very thin and almost straight at apex, the internal armature of median lobe almost rounded and the internal sac with a pair of pouch-like structures near apex of median lobe when evaginated.

This species lives exclusively at the high mountainous areas of northeastern Honshu.

The specimens measured are as follows: male (holotype) and female (Chokai, Yamagata, 19. vi. 1980, S. NAOMI coll.; NAOC).

Piestoneus oharai NAOMI, sp. nov.

Piestoneus lewisii SHARP, 1889, Ann Mag. nat. Hist., 6, 3: 465 (partim).

Male and female. Body 3.2–6.0 mm in length, flat and parallel-sided.

Head black to dark red, anterior marginal area reddish brown; pronotum black to dark red; elytra black to dark reddish brown, with a pair of elongate-rectangular markings which are a little narrower than those in *P. lewisii*; abdomen black to dark reddish brown, paratergites black through dark red to reddish brown, posterior half of 7th segment and whole part of 8th segment dark red to reddish brown.

Male. Relative measurements: HL: 35; HW: 46; PL: 34; PW: 46; EL: 55; EW: 49.

Head with antennal tubercles rounded or weakly angulate, anterolateral area of head between gena and anterior margin weakly emarginate, anterior margin of head straight, genal area weakly broadened anteriorly, postocular area weakly concave and narrowed posteriorly, clypeofrontal suture usually indistinct, but sometimes distinct; surface flat, very shallowly, widely and continuous-

ly concave from clypeofrontal area to vertex; punctures fine and sparse, interstice almost smooth and very shining, distinctly broader than diameter of puncture; microsculpture almost absent from the center of head; three pairs of setae situated at the same location as in *P. lewisii*, additional one or two short setae just above the upper margin of eye. Eyes lateral in position, small, weakly prominent, about $3/4$ to $4/5$ times as long as postocular areas. Antennae long and slender, reaching posterior margin of 5th abdominal tergite, 1st segment robust, broader than 2nd, 2nd and 3rd each almost conical, narrowed at base, 5th to 10th similar in shape to one another, each baculiform, 11th obtusely pointed, ALP: 20:11:11:15:19:19:19:19:19:19:23. Left and right mandibles each with dorsal process emarginate at tip.

Pronotum almost hexagonal, weakly bi-sinuate at anterior margin, almost parallel-sided in about anterior $3/5$, then narrowed posteriorly, posterolateral corner pointed, its dorsal surface narrowly excavate, posterior margin almost straight; surface very flat, in the posterior $2/3$ with a median longitudinal line which is very thin and distinct; punctures fine and sparse, interstice distinctly broader than diameter of puncture; microsculpture fingerprint-like, but usually obsolete or absent except for marginal area of pronotum; several very short setae at marginal area. Mesoscutellum tongue-shaped, bluntly pointed, very smooth except for fine and very sparse punctures.

Elytra elongate-rectangular, very weakly broadened posteriorly, each posterior margin weakly arcuate or posterior margins of elytra together forming a very weak emargination; surface very flat, with 6 or 7 rows of striate punctures on each elytron, the striae more distinct and regular in inner side than those in outer side, the outermost stria especially indistinct, interstice almost smooth and very shining.

Abdomen parallel-sided; paratergites developed and erect, each with elongate depression on anterior part; dorsal surface of abdomen covered with very fine and sparse punctures which are, however, larger than those in *P. lewisii*, and with very fine reticulate microsculpture; 4th to 7th terga each provided with two pairs of long setae at anterolateral parts. Aedeagus (Fig. 5D) with median lobe strongly bulbous at base, gradually narrowed apically, obtusely pointed or rounded at apex, internal armature L-shaped, internal sac tripartite at apical part when evaginated; parameres extending beyond apex of median lobe, a little narrower than those in *P. lewisii* especially in median parts, gently curved inward in whole length.

Female. Head very feebly narrower than in male; antennae shorter, reaching the posterior margin of 3rd abdominal tergite, ALP: 20:11:12:16:19:18:19:19:18:18:21.

Type material. The 35 specimens of *Piestoneus oharai* are deposited in the collection of the NHML. Of these the 15 specimens are the syntypes of *P. lewisii*;

these specimens are abbreviated hereinafter as STPL. The 17 specimens of *P. oharai* were arranged in the collection of *S. haroldi* (= *S. vittatum* at that time) (NHML); these specimens are abbreviated hereinafter as SIAH. The other 3 specimens belong to TOTTENHAM collection (NHMLC).

Holotype, male (NHMLC), Japan. G. LEWIS. 1910-320./ Miyanoshita. 20. xii.-23. xii. 80. I selected one of syntypes of *P. lewisii* for the holotype of *P. oharai* in the SHARP Collection, and the label "holotype male, *Piestoneus oharai* NAOMI" was attached to it. The holotype was dissected, and the aedeagus and abdominal terminalia are embedded into water-soluble HOYER's solution and the celluloid card is pinned under the holotype specimen after examination.

Paratypes, 1 ex., Japan. LEWIS./ SHARP Coll 1905-313./ *Piestoneus lewisi* SHP. co-type (STPL, NHMLC); 1 ex., Japan. LEWIS./ SHARP Coll 1905-313./ *Piestoneus lewisi* SHP Japan LEWIS (STPL, NHMLC); 1 ex., Japan. G. LEWIS. 1910-320./ Kuri. (STPL, NHMLC); 1 ex., *Piestoneus lewisii*. Japan. LEWIS./ Japan. LEWIS./ SHARP Coll 1905-313. (STPL, NHMLC); 6 exs., Japan. LEWIS./ SHARP Coll 1905-313. (STPL, NHMLC); 1 ex., Japan. G. LEWIS. 1910-320. (STPL, NHMLC); 6 exs., same data, (SIAH, NHMLC); 1 ex., Japan, C. E. TOTTENHAM Coll. B. M. 1974-587 (NHMLC); HOKKAIDO: 2 exs., Tomakomai experimental plantation of Hokkaido Univ., 5. vii. 1978, N. NISHIKAWA coll. (NAOC); 1 ex., Nopporo, 21. v. 1985, M. OHARA coll. (NAOC); 3 exs., Sapporo, 15. v. 1985, N. KODA coll. (NAOC); HONSHU: 3 exs., Japan. G. LEWIS. 1910-320./ Awomori. 2. ix.-9. ix. 80. (SIAH, NHMLC); 7 exs., Zenjin, Mt. Chokai, Akita Pref., 19-20. vi. 1980, S. NAOMI coll. (NAOC); 1 ex., Mt. Iide, Misawa, Fukushima Pref., 25. vii. 1987, S. NOMURA coll. (NAOC); 2 exs., Japan. G. LEWIS. B. M. 1926-369./ Chiuzenji. (SIAH, NHMLC); 2 exs., same locality, 28-30. vi. 1982, S. NAOMI coll. (NAOC); 1 ex., Nikko./ Japan. G. LEWIS. 1910-320. (SIAH, NHMLC); 2 exs., Nikko Japan/ C. E. TOTTENHAM Coll. B. M. 1974-587 (NHMLC); 2 exs., Okutama, Tokyo, 14. vi. 1975, K. EMOTO coll. (NAOC); 3 exs., Mt. Takao, Tokyo, 17. v. 1976, T. NIIZATO coll. (NAOC); 1 ex., Yokohama./ Japan G. LEWIS. 1910-320. (SIAH, NHMLC); 1 ex., Miyanoshita./ Japan. G. LEWIS. 1910-320. (STPL, NHMLC); 2 exs., Japan. G. LEWIS. 1910-320./ Miyanoshita. 24. iv.-3. v. 80. (SIAH, NHMLC); 2 exs., Japan. G. LEWIS. 1910-320./ Miyanoshita. 20. xii.-23. xii. 80. (SIAH, NHMLC); 1 ex., Naramata, Fukui Pref., 24. v. 1975, H. SASAJI coll. (NAOC); 1 ex., Mt. Aoba, Fukui Pref., 26-30. vii. 1968, H. SASAJI coll. (NAOC); 1 ex., Ikegahara, Oono, 26. vi. 1983, H. SASAJI coll. (NAOC); 1 ex., Rokuroshi, Ohno, Fukui Pref., 22-25. vii. 1976, H. SASAJI coll. (NAOC); 1 ex., same locality, 25-28. vii. 1978, H. SASAJI coll. (NAOC); 1 ex., Koike, Oono, Fukui Pref., 8. vii. 1979, H. SASAJI coll. (NAOC); 1 ex., Karikominoike, Koike, Fukui Pref., 31. v. 1977, H. SASAJI coll. (NAOC); 2 exs., Arashi, Fukui Pref., 9. vii. 1978, H. SASAJI coll. (NAOC); 2 exs., Yashagaike, Fukui Pref., 31. v.-2. vi. 1974, H. SASAJI coll.

(NAOC); 1 ex., same locality, 1. vi. 1975, H. SASAJI coll. (NAOC); 2 exs., same locality, 9–11. viii. 1973, H. SASAJI coll. (NAOC); 1 ex., Mt. Toukin, Fukui Pref., 18–20. viii. 1974, H. SASAJI coll. (NAOC); 1 ex., Taniyama, Ohno, Fukui Pref., 6. vi. 1976, H. SASAJI coll. (NAOC); 1 ex., Momoi, Sakyoku, Kyoto, 9. xii. 1980, T. OGATA coll. (NAOC); 2 exs., Japan. LEWIS./ SHARP Coll 1905-313./ *Piestoneus lewisi* Kobe. LEWIS (STPL, NHMLC); 1 ex., Hyonosen, Hyogo Pref., 25–28. vii. 1975, H. SASAJI coll. (NAOC); 6 exs., Yunoyama spa., Mie Pref., 11. v. 1975, H. OHISHI coll. (NAOC); 1 ex., Ohdaigahara, Nara Pref., 28. vii. 1974, H. OHISHI coll. (NAOC); 1 ex., Mt. Kozindake, Wakayama Pref., 3. vii. 1957, K. TSUKAMOTO coll. (NAOC); 1 ex., Mt. Daisen, Tottori Pref., 3–5. vi. 1980, S. NAOMI coll. (NAOC); 1 ex., same locality, 6. v. 1974, A. WATANABE coll. (NAOC); 1 ex., Mt. Takahachi, Tottori Pref., 20. vi. 1976, A. WATANABE coll. (NAOC); 4 exs., Wakasugi Pass, Okayama Pref., 8. v. 1977, A. WATANABE coll. (CBM-ZI 33894–33897); 7 exs., same data (NAOC); 2 exs., Mt. Gagyu, Okayama Pref., 5. iv. 1977, A. WATANABE coll. (NAOC); SHIKOKU: 5 exs., Mt. Tsurugi, Tokushima Pref., 15–17. x. 1980, S. NAOMI coll. (NAOC); 6 exs., same locality, 24–28. iii. 1962, M. T. CHUJO coll. (KUC); 1 ex., Mt. Hisaishi, Kochi Pref., 23. xi. 1972, T. OGASAWARA coll. (NAOC); KYUSHU: 2 exs., Kurodake, Kujyu, Oita Pref., 11. v. 1982, R. NODA coll. (NAOC); 3 exs., same locality, 27–29. iv. 1985, K. KONISHI coll. (NAOC); 4 exs., same locality, 28. iv. 1985, S. NOMURA coll. (NOMC); 1 ex., Mt. Hiko, Fukuoka Pref., 22. iii. 1982, K. KAWASE coll. (NAOC); 5 exs., same locality, 2. v. 1971, K. TAKENO and H. MAKIHARA coll. (KUC); 3 exs., same locality, 12. iii. 1980, K. TAKENO coll. (KUC); 3 exs., same locality, 18. xi. 1970, K. TAKENO and M. T. CHUJO coll. (KUC); 1 ex., same locality, 7. v. 1971, M. T. CHUJO coll. (KUC); 1 ex., same locality, 2. iv. 1971, M. T. CHUJO coll. (KUC); 1 ex., same locality, 25. iv. 1973, K. TAKENO coll. (KUC); 2 exs., same locality, 12. v. 1965, K. TAKENO coll. (KUC); 10 exs., Mt. Seburi, Saga Pref., 18. ix. 1977, H. OHISHI coll. (NAOC); 4 exs., same locality, 10. iii. 1981, S. NOMURA coll. (NOMC); 3 exs., Hiratani, Mt. Tara, Saga Pref., 7. iv. 1981, S. IMASAKA coll. (NAOC); 1 ex., Mt. Kyogatake, Saga Pref., 24. iv. 1987, S. NOMURA coll. (NOMC); 2 exs., Mt. Tatera, Tsushima Is., Nagasaki Pref., 2. vi. 1988, S. NOMURA coll. (NAOC); 1 ex., Sobo-kora, Kumamoto Pref., 24. v. 1970, S. NAOMI coll. (NAOC); 2 exs., Mt. Shiratori, Kumamoto Pref., 7–9. xi. 1980, M. T. CHUJO coll. (NAOC); 3 exs., Yamaingiri, Gokanoshō, Kumamoto Pref., 9. vii. 1983, H. ARAMAKI coll. (NAOC); 1 ex., Nigo, Gokanoshō, Kumamoto Pref., 3. v. 1973, S. NAOMI coll. (NAOC); 1 ex., Nihonsugi, Gokanoshō, Kumamoto Pref., 8. ii. 1970, S. NAOMI coll. (NAOC); 1 ex., Naidaijin, Kumamoto Pref., 11. viii. 1977, S. NAOMI coll. (NAOC); 1 ex., Shibisan, Kagoshima Pref., 4. iii. 1985, M. OHARA coll. (NAOC); 1 ex., same locality, 17. vii. 1983, M. OHARA coll. (NAOC); 3 exs., Miike, Miyazaki Pref., 3. ii. 1985, M. OHARA coll. (NAOC).

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu, Tsushima Is.)

Remarks. *Piestoneus oharai* is similar to *P. lewisii*, *P. deboiseae*, and *P. monticola*, but is distinctly separable from them by the surface of head without microsculpture, a little more angulate antennal tubercles, the bifurcate dorsal process of right mandible, a little larger punctures on abdominal tergites, and the median lobe of aedeagus obtusely pointed or rounded at apex.

The median lobe is slightly variable in shape. Namely, in general the median lobe is broader in apical part and more strongly rounded at apex in the specimens from Kyushu, while it is narrower in apical part and obtusely pointed at apex in the specimens from eastern part of Honshu. However, there are intermediate conditions between these typical ones from various localities so that this variation is considered here to be infraspecific.

This species is commonest and widely distributed in from lowlands through low mountainous to mountainous areas, and is sometimes collected together with *P. lewisii*, *P. deboiseae*, or *P. monticola* in the same tree.

The specimens measured are as follows: male (holotype) and female (Japan, G. LEWIS 1910-320/ Kuri; NHMLC).

Etymology. This species is named in honour of Dr. Masahiro OHARA of the Otaru Museum (Hokkaido) for his donation of piestonine specimens to me.

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